

**TRAFFIC IMPACT STUDY
FOR
ATLANTA CHINESE CHRISTIAN CHURCH NORTH
JOHNS CREEK, GA**

Prepared for:

**ACCCN
5055 Morton Road
Johns Creek, GA 30022**

Prepared By:



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1.0 INTRODUCTION

The purpose of this study is to determine the traffic impact that will result from the proposed changes to the Atlanta Chinese Christian Church North (ACCCN) property located at 5055 E Morton Road in Johns Creek, GA. The traffic analysis evaluates the current operations compared to the future conditions with the traffic generated by the development. The proposed changes to the property will consist of:

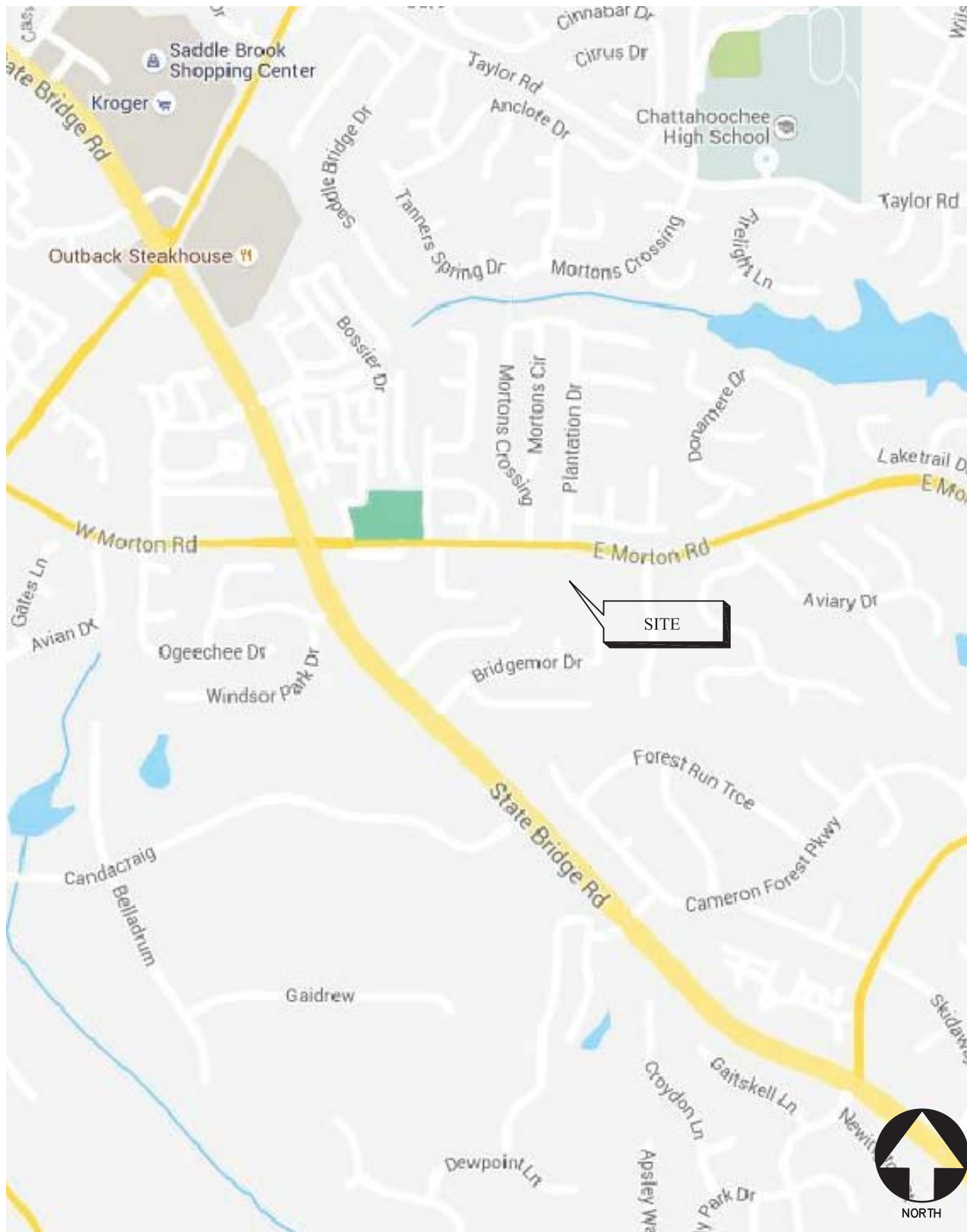
- Expansion of the current onsite parking to 400 spaces
- Construction of a 16,760 sq. ft. new “Family Life Center and Educational” building



The development proposes to keep its current access point on E Morton Road, across from Plantation Drive. As part of the expansion ACCCN also proposes to construct the following access improvements to address existing traffic concerns:

- Construction of an eastbound right turn (deceleration) lane on E Morton Road for traffic entering the site
- Construction of an second entering lane on the site driveway to receive right turning traffic

The peak Sunday entering and peak Sunday exiting hours have been analyzed in this study. Recommendations to improve traffic operations have been identified as appropriate and are discussed in detail in the following sections of the report. The location of the development and the surrounding roadway network is shown in Figure 1.



LOCATION

FIGURE 1
A&R Engineering Inc.

2.0 EXISTING FACILITIES / CONDITIONS

2.1 Roadway Facilities

The following is a brief description of each of the roadway facilities located in the study area.

2.1.1 E Morton Road

E Morton Road is an east-west, two-lane, undivided roadway with a posted speed limit of 35 mph in the vicinity of the site. E Morton Road is classified as a “Collector” road in the Johns Creek Transportation Master Plan.

2.1.2 Plantation Drive

Plantation Drive is a north-south, two-lane, residential roadway with a posted speed limit of 25 mph. Plantation Drive is classified as a “Local” road in the Johns Creek Transportation Master Plan.

3.0 STUDY METHODOLOGY

In this study, the methodology used for evaluating traffic operations at each of the subject intersections is based on the criteria set forth in the Transportation Research Board's Highway Capacity Manual, 2000 edition (HCM 2000). Synchro software, which utilizes the HCM 2000 methodology, was used for the analysis. The following is a description of the methodology employed for the analysis of unsignalized and signalized intersections.

For unsignalized intersections at which the side street or minor street is controlled by a stop sign, the criteria for evaluating traffic operations are the level-of-service (LOS) for the turning movements at the intersection and the level-of-service for the overall intersection. Level-of-service is based on the average controlled delay incurred at the intersection. Controlled delay for unsignalized intersections includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Several factors affect the controlled delay for unsignalized intersections, such as the availability and distribution of gaps in the conflicting traffic stream, critical gaps, and follow-up time for a vehicle in the queue.

Level-of-service is assigned a letter designation from "A" through "F". Level-of-service "A" indicates excellent operations with little delay to motorists, while level-of-service "F" exists when there are insufficient gaps of acceptable size to allow vehicles on the side street to cross safely, resulting in extremely long total delays and long queues. The level-of-service criteria for two-way stop-controlled and all-way stop-controlled (unsignalized) intersections are given in Table 1.

TABLE 1 — LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS	
Level-of-service	Average Delay (sec)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Source: 2000 Highway Capacity Manual

4.0 EXISTING TRAFFIC ANALYSIS

Existing traffic counts and intersection geometric data were obtained for the E Morton Road at Plantation Drive / ACCCN Driveway intersection. Turning movement counts were collected on Sunday, August 23, 2015. All turning movement counts were recorded during the hours of 9:30am to 1:30pm. Data from the counts are shown graphically in Figure 2. Notably, the volumes on the ACCCN driveway indicate that there are two short periods of high-volume traffic with otherwise low-volume traffic during other times.

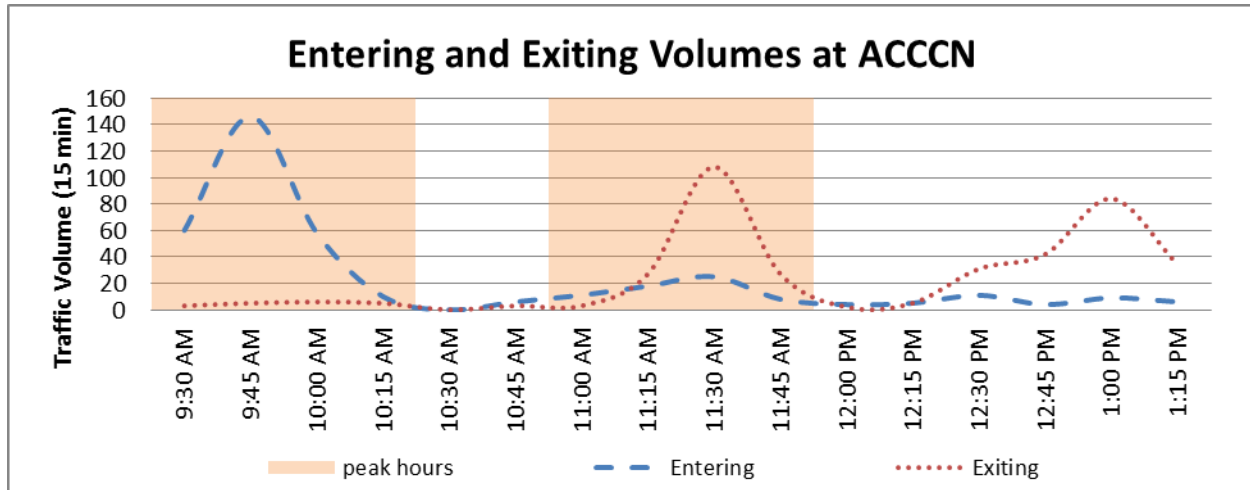


Figure 2 – Entering and Exiting Volumes at ACCCN Driveway

The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersections were then determined to be 9:30-10:30am for traffic entering ACCCN and 11:00am-12:00pm for traffic exiting ACCCN. These volumes make up the peak hour traffic volumes for the intersections counted and are shown in Figure 3.

4.1 Existing Traffic Operations

Existing traffic operations were analyzed at the study intersections in accordance with the HCM methodology. A queue length analysis was also performed. The results of the analyses are shown in Table 2. The existing traffic control and lane geometry for the intersections are shown in Figure 3.





TABLE 2 – EXISTING INTERSECTION OPERATIONS					
Intersection	Traffic Control	9:30-10:30am		11:00am-Noon	
		LOS	Avg. Delay (sec)	LOS	Avg. Delay (sec)
<u>E Morton Drive @ Plantation Dr / ACCCN Drwy</u>					
-Eastbound Left	Stop Controlled: Northbound and Southbound	A	7.4	A	7.6
-Westbound Left		A	8.7	A	7.5
-Northbound Approach		B	13.4	C	23.0
-Southbound Approach		A	8.9	A	9.6

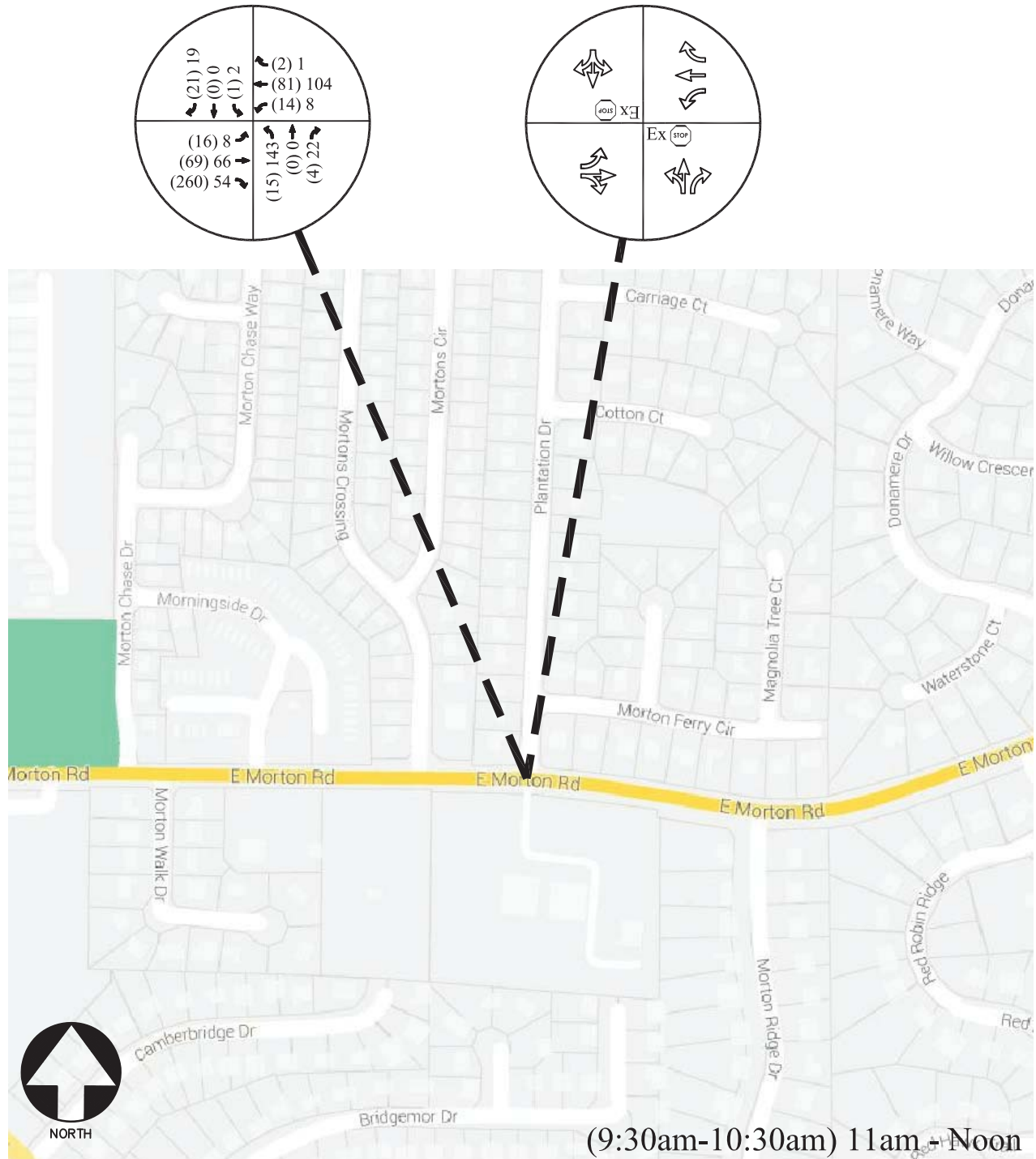
The results of existing traffic operations analysis indicates that the study intersection is operating at an acceptable level-of-service ("D" or better by local standards) in both peak hours.

4.2 Accident Data

Accident reports were obtained for the most recent five years (2010-2015). Three collisions were found to have occurred at the intersection of E Morton Road at Plantation Drive / ACCCN Driveway. Two of the three were single-vehicle collisions where the driver lost control of the vehicle. The other involved a rear-end collision of two westbound vehicles on E Morton Road during icy conditions. No injuries were recorded for any of the collisions. None of the reported collisions involved movements entering or exiting 5055 E Morton Road.

LEGEND

- Ex   Existing Signed Approach
-  Existing Lane Geometry
- Ex  Existing Traffic Signal



EXISTING PEAK-HOUR VOLUMES

FIGURE 3
A&R Engineering Inc.

5.0 PROPOSED DEVELOPMENT

The site will be located at 5055 E Morton Road. The development currently consists of:

- Existing Church: 28,200 sq. ft. (500 seat sanctuary)
- Existing Paved Parking: 231 Spaces

The development proposes the following changes to the site:

- Expansion of the total onsite parking to 400 spaces
- Construction of a 16,760 sq. ft. new “Family Life Center and Educational” building

It should be noted that the planned building addition will not affect the total seating capacity in the sanctuary, which will remain at 500 seats. A site plan is shown in Figure 6.

5.1 Trip Generation

The addition of the “Family Life Center and Educational” building is not anticipated to be a large contributing factor in peak hour traffic for the following reasons:

- The building addition will not increase seating capacity for the main service, which drives the peak hour volumes at the property.
- A building of this type is anticipated to have uses outside of the main service times with a portion of its users not being of driving age.
- The amount of parking, which is often at or near capacity, is much more of a limiting factor for the site traffic.

Because parking is the most limiting factor for this site’s traffic, the trip generation estimates for the project were based on the increased parking capacity. The existing capacity of the property was determined by adding the total paved spaces to the maximum observed parked cars in the unpaved areas of the property.

The current parking demand exceeds the number of paved parking spaces on the site. During each observed Sunday between March 2015 and August 2015, the paved parking spaces in the lot were 100% occupied, an average of 53 parked cars were observed in the unpaved spaces around the sides of the parking lot, and an average of 52 parked cars were observed in the grassed area. A chart for the number of parked vehicles by location is provided in Figure 4. The location of each of these areas is shown in Figure 5.

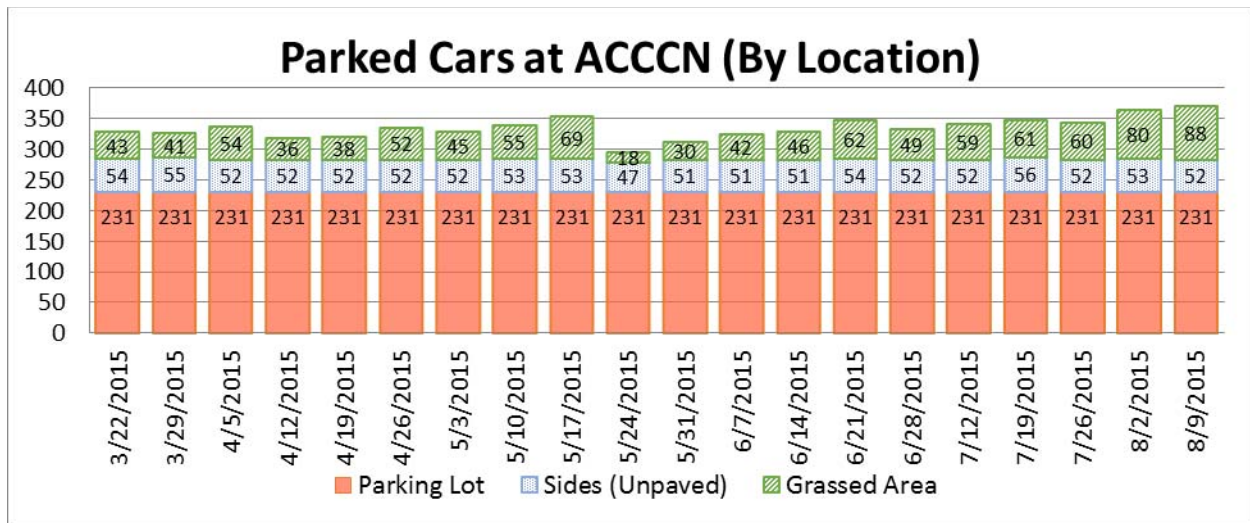


Figure 4 – Parked Cars at ACCCN

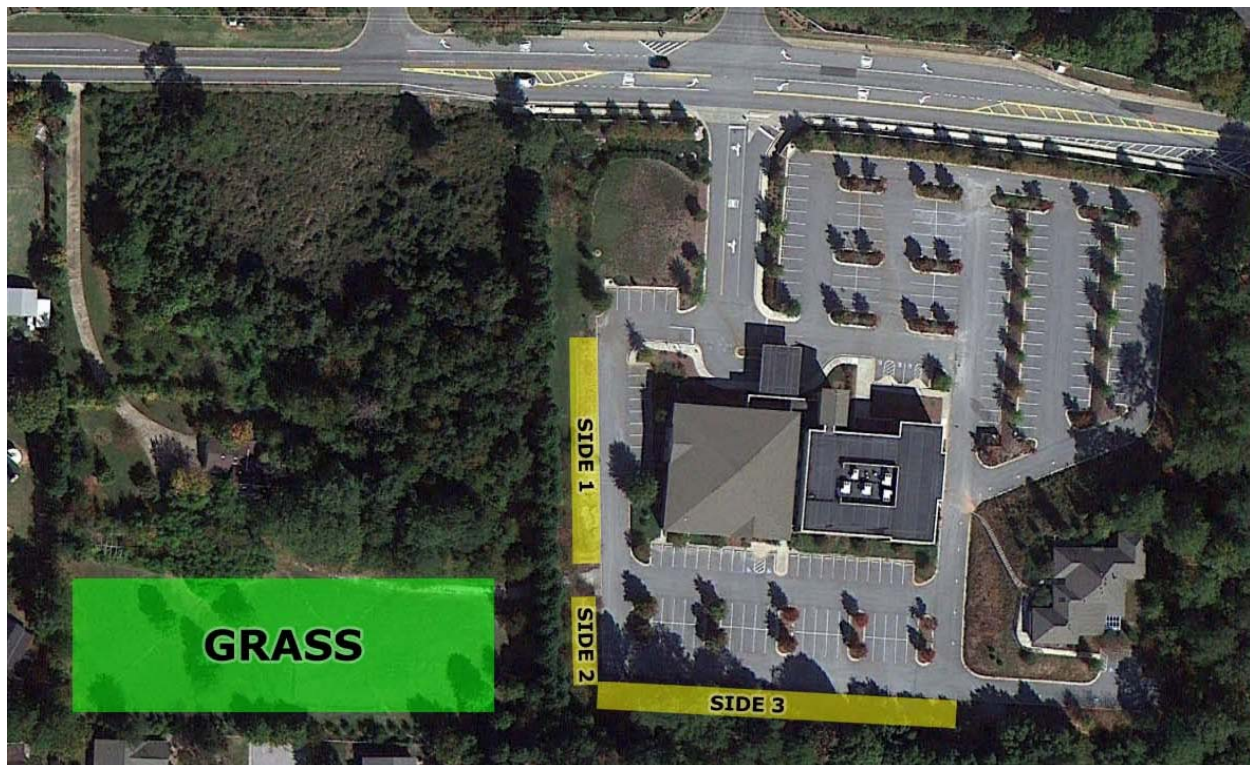


Figure 5 – Current Parking Areas

TABLE 3 – PARKING CAPACITY CHANGES		
PARKING TYPE	EXISTING CONDITIONS	FUTURE CONDITIONS
Paved Parking Spaces	231	400
Side (Unpaved) Area*	56	
Grassed Area*	88	
Total Parking Capacity	375	400 (6.7% increase)

*Based on max observed from parking counts (March 2015 - August 2015)

As part of the conditions for the Special Use Permit to allow the parking lot expansion, the site will be limited to a total of 400 parking spaces. This will increase the available parking onsite by 6.7% as shown in Table 3. Because the site traffic may vary from week-to-week, an additional increase to 10% was used (as worst-case-scenario) to account for normal variations from the mean ($\pm 2.4\%$ based on parking data) on the day that traffic counts were collected. The calculated total trip generation for the proposed development is shown in Table 4.

TABLE 4 — TRIP GENERATION						
Site Condition	9:30 - 10:30am			11:00am - Noon		
	Enter	Exit	Total	Enter	Exit	Total
Existing Traffic Volume	274	19	293	62	165	227
Added Traffic Volume (10% increase)	27	2	29	6	17	23
Total Future Site Traffic	301	21	322	68	182	250

5.2 Trip Distribution

The trip distribution describes how traffic arrives and departs from the site. An overall trip distribution was developed for the site based on the existing travel pattern. The site-generated peak hour traffic volumes, shown in Table 5, were assigned to the study area intersections based on this distribution. The peak hour new traffic generated by the site is shown in Figure 7.



MASTER PLAN 2015 ATLANTA CHINESE CHRISTIAN CHURCH NORTH



MORTONS XING

MORTON ROAD

PLANTATION DR.

EXISTING BUILDING : 28,220 SF.
NEW ADDITION: 16,760 SF.
TOTAL AREA: 44,980 SF.

TOTAL PARKING: 400 SPACES



PEAK HOUR ADDED SITE TRAFFIC

FIGURE 7
A&R Engineering Inc.

6.0 FUTURE TRAFFIC ANALYSIS

The future traffic operations are analyzed for the “Build” conditions. This provides a basis of reference for determining both the contribution of the site to overall traffic conditions and the additional improvements needed to provide sufficient site access and capacity for passing traffic. Note that survey and construction drawings would be needed to verify the feasibility and extent of additional right-of-way required for any recommended improvements.

The “Build” or development conditions include the traffic from the “Existing” conditions plus the added traffic from the proposed site changes. In order to evaluate future traffic operations in this area, the additional traffic volumes from the site (Figure 7) were added to the existing traffic volumes (Figure 3) to calculate the future traffic volumes after implementation of the proposed site plan. These total future traffic volumes (Figure 8) were used to evaluate the “Build” conditions. The results of the “Build” operations analyses with the assumed site access configuration are shown in Tables 5 and 6.

6.1 Site Access Improvements

The following access improvements were considered when modeling the future operations at the intersection:

- A deceleration lane will be constructed for entering traffic based on local standards (See Appendix).
- An additional entering lane will be constructed on the site driveway to receive traffic from the newly constructed deceleration lane

6.2 Future “Build” Traffic Operations

The “Build” conditions are evaluated to determine effectiveness of the site access improvements with the projected traffic increases. Results of the analysis are shown in Tables 5 and 6. Recommendations on traffic control and lane geometry are shown graphically in Figure 8.

TABLE 5 — FUTURE “BUILD” INTERSECTION OPERATIONS				
Intersection	Existing		Future (With Improvements)	
	9:30-10:30am	11am-Noon	9:30-10:30am	11am-Noon
E Morton Drive @ Plantation Dr / ACCCN Drwy				
-Eastbound Left	A (7.4)	A (7.6)	A (7.4)	A (7.6)
-Westbound Left	A (8.7)	A (7.5)	A (8.9)	A (7.6)
-Northbound Approach	B (13.4)	C (23.0)	B (10.9)	C (23.8)
-Southbound Approach	A (8.9)	A (9.6)	A (8.9)	A (9.6)







TABLE 6 — FUTURE “BUILD” INTERSECTION 95TH PERCENTILE QUEUES

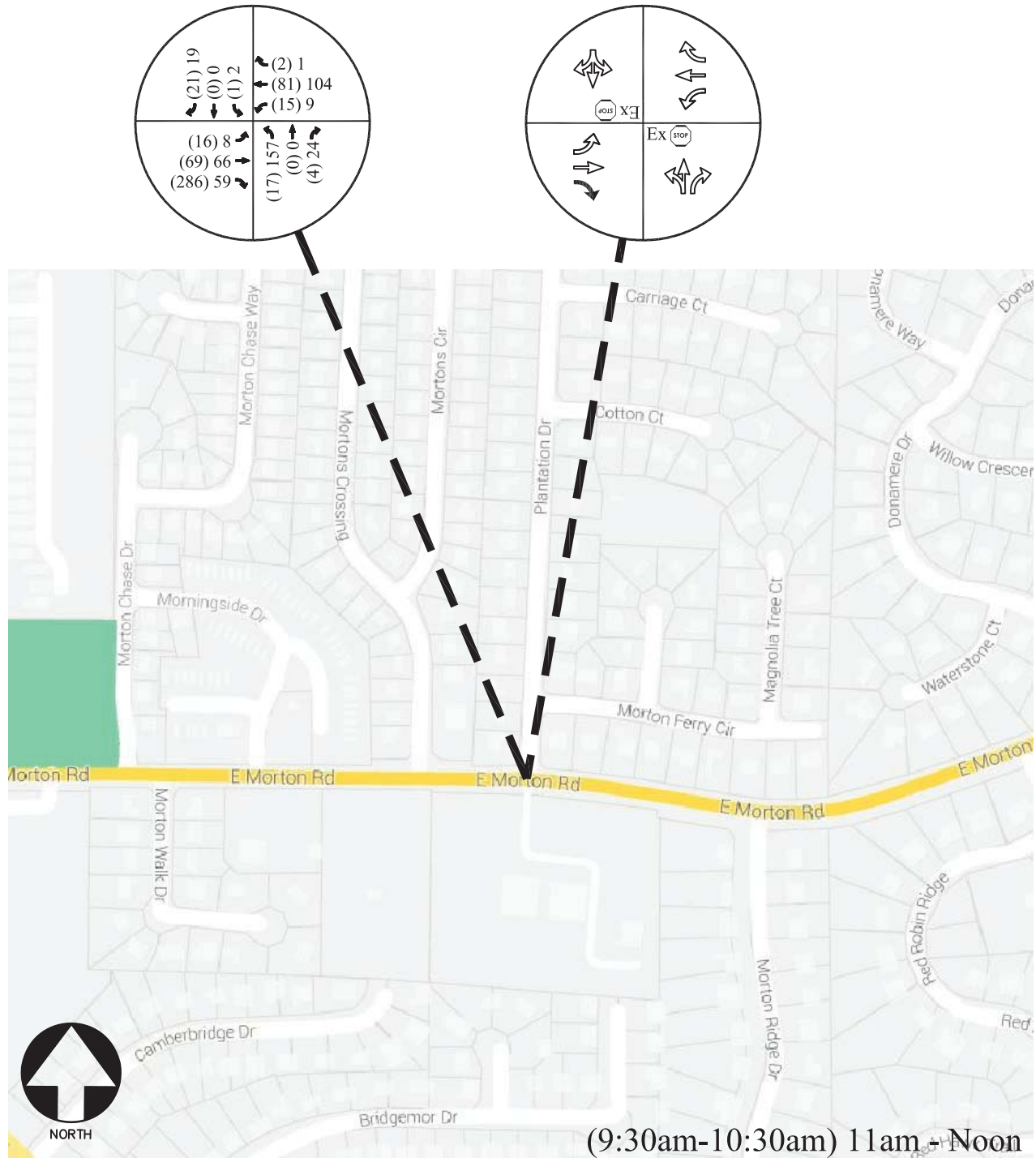
Intersection	Available Storage	Existing		Future (With Improvements)	
		9:30 - 10:30am	11am - Noon	9:30 - 10:30am	11am - Noon
<u>E Morton Drive @ Plantation Dr / ACCCN Drwy</u>					
-Eastbound Left	65'	1	1	1	1
-Eastbound Through	-	0	0	0	0
-Eastbound Right	100'	-	-	0	0
-Westbound Left	135'	1	1	1	1
-Westbound Through	-	0	0	0	0
-Westbound Right	175'	0	0	0	0
-Northbound Left / Through	-	4	134	3	151
-Northbound Right	-	1	5	0	5
-Southbound Left / Through / Right	-	3	4	3	4

6.3 Recommendations for Site Mitigation Improvements

Improvements that are identified as mitigation improvements address deficiencies that are caused by site traffic and can be identified as related to the proposed development. Because delays would not be above an acceptable level-of-service (“D” or better by local standards), mitigation improvements have not been identified outside of the improvements already planned for the site driveway (see Section 6.2).

LEGEND

- Ex  Existing Signed Approach
-  Existing Lane Geometry
- Ex  Existing Traffic Signal
-  Proposed Signed Approach
-  Proposed Lane Geometry
-  Proposed Traffic Signal



FUTURE (BUILD) PEAK HOUR VOLUMES AND LANE GEOMETRY

FIGURE 8

A&R Engineering Inc.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Traffic impacts were evaluated for the potential increase in traffic from the proposed changes to the Atlanta Chinese Christian Church North at 5055 E Morton Road in Johns Creek, GA. The proposed changes will consist of:

- Expansion of the current onsite parking to 400 spaces
- Construction of a 16,760 sq. ft. new Family Life Center and Educational Building

The analysis of the project included the evaluation of Existing and Future operations at the intersection of E Morton Road at Plantation Drive / ACCCN driveway

7.1 Summary of Existing Conditions

The existing operations can be characterized through examination of two peak periods – entering traffic from 9:45-10:00am and exiting traffic from 11:30-11:45am. During the 9:45am entering peak, traffic predominately turns right into the site. This is the most impacted periods, as the low speed movement of vehicles turning into the driveway can temporarily slow through traffic on E Morton Road. During the 11:30am exiting peak, traffic queues at the stop sign to turn predominantly left onto E Morton Road. Because there is relatively little conflicting traffic on E Morton Road during either of these periods, the delays (which are short-lived) are within acceptable levels-of-service for the intersection.

7.2 Findings and Recommendations

The proposed changes to the property appear to be primarily focused on serving the existing congregation, as the building additions do not increase the seating in the worship area and the majority of the added parking will be used to replace the overflow parking occurring in the unpaved areas of the property. The proposed project improvements are anticipated to help mitigate traffic concerns in the following ways:

- Providing a right lane on E Morton Road for entering traffic, will allow vehicles to decelerate outside of the through lane – lessening the impacts to eastbound traffic on E Morton Road.
- Providing a second inbound lane will allow for easier ingress – reducing the potential for backups onto E Morton Road
- Replacement of unpaved parking areas with paved and striped spaces will improve internal circulation – lessening the potential for backups from entering traffic onto E Morton Road

Because delays would not be increased above an acceptable level-of-service (“D” or better by local standards), additional mitigation improvements have not been identified apart from those planned for the site driveway, listed above. The church may, however, wish to consider additional traffic control measures as they are needed, such as:

- parking attendants to direct the peak entering traffic to available parking spaces
- a police officer to assist traffic exit onto E Morton Road during peak periods

Appendix

Existing Intersection Traffic Counts	
Parking Count Data	
Accident Data	
Existing Intersection Analysis.....	
GDOT Right Turn Lane Analysis.....	
Future “Build” Intersection Analysis.....	
Traffic Volume Worksheets	

EXISTING INTERSECTION TRAFFIC COUNTS

2

Morton Rd
(35 mph)

Plantation Dr
(25 mph)

87-28001

Atlanta
Chinese
Christian Church Bldg

stop

stop



Reliable Traffic Data Services, LLC

Tel: (770) 578-8158 | Fax: (770) 578-8159
info@reliabletraffic.org | www.reliabletraffic.org

TMC Data
E Morton Rd @ Plantation Dr/
Atlanta Chinese Christian Church Drwy
9.30am - 1.30pm Sunday

File Name : 37280001-Sun
Site Code : 37280001
Start Date : 8/23/2015
Page No : 1

Groups Printed- Cars, Buses, Trucks

	Atlanta Chinese Christian Church Drwy Northbound					Plantation Dr Southbound					E Morton Rd Eastbound					E Morton Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
09:30 AM	2	0	1	0	3	0	0	5	0	5	3	12	57	0	72	3	19	0	0	22	102
09:45 AM	5	0	0	0	5	1	0	6	0	7	5	12	137	0	154	9	17	1	0	27	193
Total	7	0	1	0	8	1	0	11	0	12	8	24	194	0	226	12	36	1	0	49	295
10:00 AM	4	0	2	0	6	0	0	2	0	2	3	17	56	0	76	2	21	0	0	23	107
10:15 AM	4	0	1	0	5	0	0	8	0	8	5	28	10	0	43	0	24	1	0	25	81
10:30 AM	0	0	0	0	0	0	0	10	0	10	6	20	0	0	26	0	41	0	0	41	77
10:45 AM	3	0	0	0	3	1	0	6	0	7	2	15	6	0	23	0	21	1	0	22	55
Total	11	0	3	0	14	1	0	26	0	27	16	80	72	0	168	2	107	2	0	111	320
11:00 AM	3	0	0	0	3	1	0	9	0	10	2	13	11	0	26	0	25	1	0	26	65
11:15 AM	26	0	1	0	27	1	0	3	0	4	3	12	17	0	32	1	22	0	0	23	86
11:30 AM	91	0	17	0	108	0	0	2	0	2	0	22	19	0	41	6	26	0	0	32	183
11:45 AM	23	0	4	0	27	0	0	5	0	5	3	19	7	0	29	1	31	0	0	32	93
Total	143	0	22	0	165	2	0	19	0	21	8	66	54	0	128	8	104	1	0	113	427
12:00 PM	2	0	0	0	2	1	0	6	0	7	2	20	4	0	26	0	32	1	0	33	68
12:15 PM	4	0	1	0	5	1	0	4	0	5	4	30	5	0	39	0	30	1	0	31	80
12:30 PM	27	0	4	0	31	0	0	10	0	10	4	26	10	0	40	1	30	2	0	33	114
12:45 PM	37	0	5	0	42	0	0	7	0	7	1	28	3	0	32	1	38	0	0	39	120
Total	70	0	10	0	80	2	0	27	0	29	11	104	22	0	137	2	130	4	0	136	382
01:00 PM	78	0	6	0	84	0	1	8	0	9	4	28	7	0	39	1	20	0	0	21	153
01:15 PM	32	0	2	0	34	0	0	3	0	3	7	14	6	0	27	0	24	0	0	24	88
Grand Total	341	0	44	0	385	6	1	94	0	101	54	316	355	0	725	25	421	8	0	454	1665
Apprch %	88.6	0	11.4	0		5.9	1	93.1	0		7.4	43.6	49	0		5.5	92.7	1.8	0		
Total %	20.5	0	2.6	0	23.1	0.4	0.1	5.6	0	6.1	3.2	19	21.3	0	43.5	1.5	25.3	0.5	0	27.3	

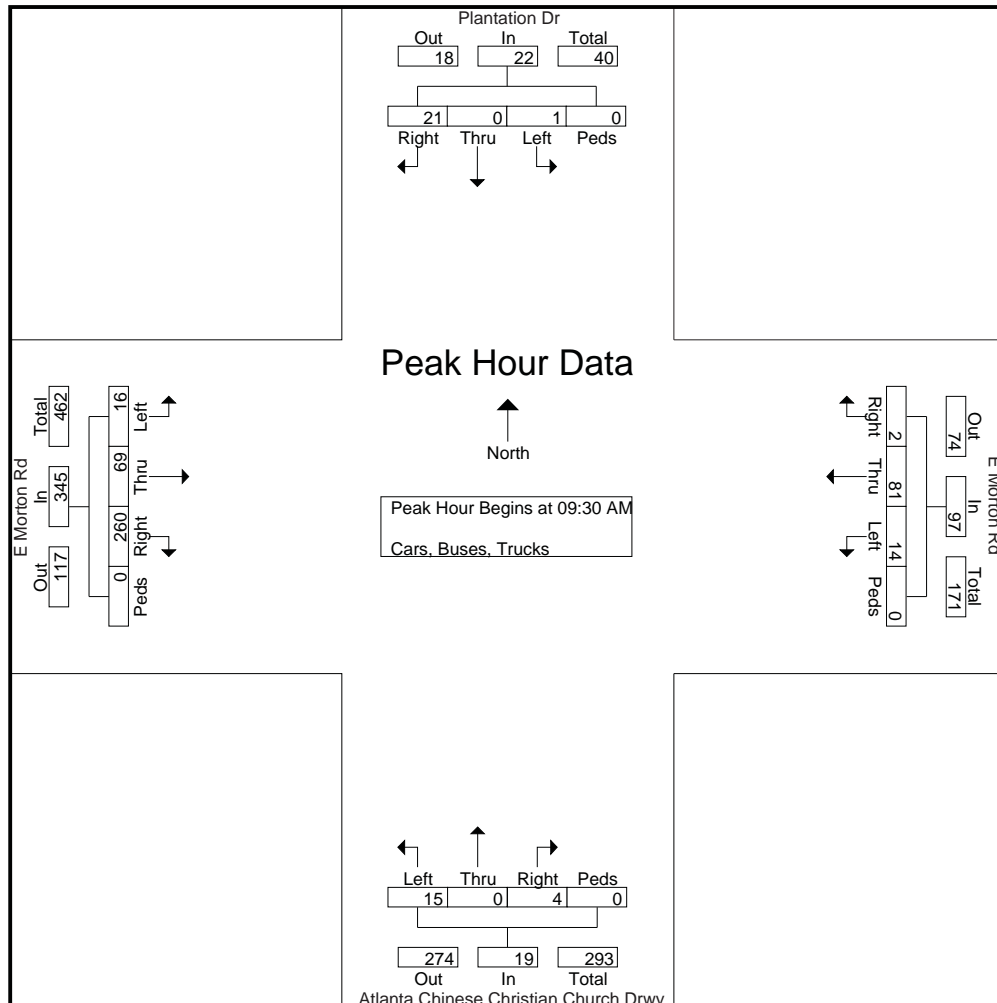
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Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 09:30 AM to 01:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 09:30 AM																					
09:30 AM	2	0	1	0	3	0	0	5	0	5	3	12	57	0	72	3	19	0	0	22	102
09:45 AM	5	0	0	0	5	1	0	6	0	7	5	12	137	0	154	9	17	1	0	27	193
10:00 AM	4	0	2	0	6	0	0	2	0	2	3	17	56	0	76	2	21	0	0	23	107
10:15 AM	4	0	1	0	5	0	0	8	0	8	5	28	10	0	43	0	24	1	0	25	81
Total Volume	15	0	4	0	19	1	0	21	0	22	16	69	260	0	345	14	81	2	0	97	483
% App. Total	78.9	0	21.1	0		4.5	0	95.5	0		4.6	20	75.4	0		14.4	83.5	2.1	0		
PHF	.750	.000	.500	.000	.792	.250	.000	.656	.000	.688	.800	.616	.474	.000	.560	.389	.844	.500	.000	.898	.626



P A R K I N G C O U N T D A T A

Date	Parking			
	Pavement	Sides	Grass	Total
3/22/2015	231	54	43	328
3/29/2015	231	55	41	327
4/5/2015	231	52	54	337
4/12/2015	231	52	36	319
4/19/2015	231	52	38	321
4/26/2015	231	52	52	335
5/3/2015	231	52	45	328
5/10/2015	231	53	55	339
5/17/2015	231	53	69	353
5/24/2015	231	47	18	296
5/31/2015	231	51	30	312
6/7/2015	231	51	42	324
6/14/2015	231	51	46	328
6/21/2015	231	54	62	347
6/28/2015	231	52	49	332
7/12/2015	231	52	59	342
7/19/2015	231	56	61	348
7/26/2015	231	52	60	343
8/2/2015	231	53	80	364
8/9/2015	231	52	88	371
AVERAGE	231	53	52	335

Cars Parked in Grass				
MIN	18			
MAX	88			
MEAN	51.40			
Std Dev	16.47			
Sample Size	20			
Std Error	3.68			
Prob	95%			
T Score	2.093			
Margin of Error	±7.7			

Cars Parked in Perimeter				
MIN	47			
MAX	56			
MEAN	52.30			
Std Dev	1.81			
Sample Size	20			
Std Error	0.40			
Prob	95%			
T Score	2.093			
Margin of Error	±.8			

All Spaces				
MIN	296			
MAX	371			
MEAN	334.70			
Std Dev	17.39			
Sample Size	20			
Std Error	3.89			
Prob	95%			
T Score	2.093			
Margin of Error	±8.1			
95th Percentile	364.35			

ACCIDENT DATA

AccidentNo	Date	Time	MannerOfCollision	FirstHarmfulEvent	Surface	DirVeh1	MnvrVeh1	U1Factors	DirVeh2	MnvrVeh2
3716323	12/15/2010	19:00:00	Rear End	Motor Vehicle In Motion	Icy	South	Straight	Following too Close	South	Straight
4089667	4/20/2012	10:03:00	Not A Collision with Motor Vehicle	Curb	Dry	West	Straight	Driver Lost Control		
4177174	7/4/2012	5:54:00	Not A Collision with Motor Vehicle	Other - Fixed Object	Dry	North	Turning Left	Improper Turn		






















EXISTING INTERSECTION ANALYSIS

HCM Unsignalized Intersection Capacity Analysis

1: E Morton Rd & Plantation Dr

Entering Peak (Existing)

8/27/2015






















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	69	260	14	81	2	15	0	4	1	0	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.56	0.56	0.56	0.90	0.90	0.90	0.79	0.79	0.79	0.69	0.69	0.69
Hourly flow rate (vph)	29	123	464	16	90	2	19	0	5	1	0	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	92			588			564	536	355	307	766	90
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	92			588			564	536	355	307	766	90
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			95	100	99	100	100	97
cM capacity (veh/h)	1502			988			411	436	689	624	322	968
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1				
Volume Total	29	588	16	90	2	19	5	32				
Volume Left	29	0	16	0	0	19	0	1				
Volume Right	0	464	0	0	2	0	5	30				
cSH	1502	1700	988	1700	1700	411	689	944				
Volume to Capacity	0.02	0.35	0.02	0.05	0.00	0.05	0.01	0.03				
Queue Length 95th (ft)	1	0	1	0	0	4	1	3				
Control Delay (s)	7.4	0.0	8.7	0.0	0.0	14.2	10.3	8.9				
Lane LOS	A		A			B	B	A				
Approach Delay (s)	0.3		1.3			13.4		8.9				
Approach LOS						B		A				
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			36.3%	ICU Level of Service				A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

1: E Morton Rd & Plantation Dr

Exiting Peak (Existing)

8/27/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	66	54	8	104	1	143	0	22	2	0	19
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.78	0.78	0.78	0.58	0.58	0.58	0.38	0.38	0.38	0.53	0.53	0.53
Hourly flow rate (vph)	10	85	69	14	179	2	376	0	58	4	0	36
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	181			154			382	348	119	370	381	179
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	181			154			382	348	119	370	381	179
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			31	100	94	99	100	96
cM capacity (veh/h)	1394			1427			545	566	932	543	542	864
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1				
Volume Total	10	154	14	179	2	376	58	40				
Volume Left	10	0	14	0	0	376	0	4				
Volume Right	0	69	0	0	2	0	58	36				
cSH	1394	1700	1427	1700	1700	545	932	818				
Volume to Capacity	0.01	0.09	0.01	0.11	0.00	0.69	0.06	0.05				
Queue Length 95th (ft)	1	0	1	0	0	134	5	4				
Control Delay (s)	7.6	0.0	7.5	0.0	0.0	25.1	9.1	9.6				
Lane LOS	A		A			D	A	A				
Approach Delay (s)	0.5		0.5			23.0		9.6				
Approach LOS						C		A				
Intersection Summary												
Average Delay	12.6											
Intersection Capacity Utilization	28.0%			ICU Level of Service			A					
Analysis Period (min)	15											

GDOT RIGHT TURN LANE ANALYSIS

RIGHT TURN LANE ANALYSIS per Johns Creek standards

Johns Creek standards require the installation of a deceleration lane when traffic entering the development meets or exceeds the values shown in the following table.

	2 LANES ON MAIN ROAD		>2 LANES ON MAIN ROAD	
	35-40 MPH	>40 MPH	35-40 MPH	>40 MPH
MAIN ROADWAY ADT	8,000	4,000	12,000	10,000
DAILY RIGHT TURNING VOLUME	150	75	150	75
PEAK HOUR RIGHT TURNING VOLUME	15	7	15	7

APPLICATION OF REQUIREMENTS FOR DECELERATION LANES				
Driveway	AADT	Projected Right Turn Volume (veh/hr)	Johns Creek Threshold (veh/hr)	Requirement
5055 E Morton Road (Two-Lane Road / 35 mph)	≤8,000 (Estimated)	286	15	100' storage 50' taper

Based on the number of existing and projected right turns the site driveway will meet the City requirements for construction of deceleration lane.























FUTURE “BUILD” INTERSECTION ANALYSIS

HCM Unsignalized Intersection Capacity Analysis

1: E Morton Rd & Plantation Dr

Entering Peak (Future)

8/27/2015























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	69	286	15	81	2	17	0	4	1	0	21
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.56	0.56	0.56	0.90	0.90	0.90	0.79	0.79	0.79	0.69	0.69	0.69
Hourly flow rate (vph)	29	123	511	17	90	2	22	0	5	1	0	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	92			634			334	306	123	309	814	90
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	92			634			334	306	123	309	814	90
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			96	100	99	100	100	97
cM capacity (veh/h)	1502			949			583	586	928	622	301	968
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	29	123	511	17	90	2	22	5	32			
Volume Left	29	0	0	17	0	0	22	0	1			
Volume Right	0	0	511	0	0	2	0	5	30			
cSH	1502	1700	1700	949	1700	1700	583	928	944			
Volume to Capacity	0.02	0.07	0.30	0.02	0.05	0.00	0.04	0.01	0.03			
Queue Length 95th (ft)	1	0	0	1	0	0	3	0	3			
Control Delay (s)	7.4	0.0	0.0	8.9	0.0	0.0	11.4	8.9	8.9			
Lane LOS	A			A			B	A	A			
Approach Delay (s)	0.3			1.4			10.9		8.9			
Approach LOS							B		A			
Intersection Summary												
Average Delay	1.1											
Intersection Capacity Utilization	34.4%			ICU Level of Service					A			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

1: E Morton Rd & Plantation Dr

Exiting Peak (Future)

8/27/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	66	59	9	104	1	157	0	24	2	0	19
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.78	0.78	0.78	0.58	0.58	0.58	0.38	0.38	0.38	0.53	0.53	0.53
Hourly flow rate (vph)	10	85	76	16	179	2	413	0	63	4	0	36
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	181			160			351	317	85	379	391	179
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	181			160			351	317	85	379	391	179
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			28	100	94	99	100	96
cM capacity (veh/h)	1394			1419			570	588	974	534	535	864
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	10	85	76	16	179	2	413	63	40			
Volume Left	10	0	0	16	0	0	413	0	4			
Volume Right	0	0	76	0	0	2	0	63	36			
cSH	1394	1700	1700	1419	1700	1700	570	974	816			
Volume to Capacity	0.01	0.05	0.04	0.01	0.11	0.00	0.72	0.06	0.05			
Queue Length 95th (ft)	1	0	0	1	0	0	151	5	4			
Control Delay (s)	7.6	0.0	0.0	7.6	0.0	0.0	26.1	9.0	9.6			
Lane LOS	A			A			D	A	A			
Approach Delay (s)	0.5			0.6			23.8		9.6			
Approach LOS							C		A			
Intersection Summary												
Average Delay	13.5											
Intersection Capacity Utilization	29.2%			ICU Level of Service					A			
Analysis Period (min)	15											

T R A F F I C V O L U M E W O R K S H E E T S

Atlanta Chinese Christian Church North
Traffic Volumes
Future Conditions

A&R Engineering
August 2015

E Morton Road @ ACCCN

A.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	15	0	4	19	1	0	21	22	16	69	260	345
Growth Factor (%)	0	0	0		0	0	0		0	0	0	
Base Condition:	15	0	4	19	1	0	21	22	16	69	260	345
Parking Increase (%)	10	10	10		0	10	0		0	0	10	
Added Church Trips	2	0	0	2	0	0	0	0	0	0	26	26
Future Traffic Volumes:	17	0	4	21	1	0	21	22	16	69	286	371

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	143	0	22	165	2	0	19	21	8	66	54	128
Growth Factor (%)	0	0	0		0	0	0		0	0	0	
Base Condition:	143	0	22	165	2	0	19	21	8	66	54	128
Parking Increase (%)	10	10	10		0	10	0		0	0	10	
Added Church Trips	14	0	2	16	0	0	0	0	0	0	5	5
Future Traffic Volumes:	157	0	24	181	2	0	19	21	8	66	59	133